

Modified gravity in light of cosmic tensions

Wednesday 8 September 2021 12:30 (20 minutes)

The standard cosmological model, Λ CDM, is based on General relativity and assumes the Universe is made of a Dark energy component in the form of a cosmological constant (Λ). Although Λ CDM gives an astonishing description of the Universe, the model shows some shortcomings: the so-called cosmological constant problems. Furthermore, some mild observational tensions among different datasets emerge in this model, for instance, on the value of the Hubble constant and amplitude of the matter power spectrum at present time and scale of 8 h/Mpc. This picture summarizes the motivations at the basis of speculations on the validity of the Λ CDM model and the search for new physics beyond the standard model.

I will present the phenomenology and cosmological bounds on alternative cosmological models compatible with the stringent constraint on the speed of propagation of gravitational waves from GW170817 and GRB170817A and which either offer a better fit to data than Λ CDM or alleviate the cosmic tensions.

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Session Classification: Regular Sessions